

20. (Twice Amended) A method of forming an integrated circuit capacitor on a substrate, the method comprising:

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forming a metal electrode having a rugged surface on the substrate;
covering said rugged surface with a dielectric; and
covering said dielectric with a second electrode.

REMARKS

In the Office Action, the Examiner objected to Claims 9-10 under 37 CFR 1.75 as being a substantial duplicate of Claim 6 of the Schuegraf reference (U.S. Patent No. 6,197,634). However, the Applicant has amended Claims 9-10 as indicated above so that they are no longer coextensive in scope. In addition, the Examiner rejected Claim 6 under the judicially created obviousness-type double patenting as being unpatentable over Claim 6 of the Schuegraf reference. However, the Applicant is filing a terminal disclaimer concurrently with this Response to overcome the rejection.

In the Office Action, the Examiner indicated that the Claims contain allowable subject matter because prior art fails to teach exposing the electrode to a refractory metal-halide complex. Therefore, the Applicant requests reconsideration of the Claims.

In the Office Action, the Examiner rejected Claims 6-8 under 35 U.S.C. 102(b) as being anticipated by the Chu et al. reference (U.S. Patent No. 5,245,206). In addition, the Examiner rejected Claims 11-12 under 35 U.S.C. 103(a) as being unpatentable over Chu et al. in view of Zahurek et al. (U.S. Patent No. 5,760,434). However, the Chu et al. reference fails to teach “replacing the silicon in the silicon electrode structure with a metal, thereby forming a rugged metal electrode” as the Applicant claims in Claim 6. Instead, the Chu et al. reference teaches (column 3, lines 65-68; column 4, lines 1-30) growing a roughened germanium (or metal silicide) layer on a p-doped silicon substrate and the conformally depositing an overlying layer of doped polysilicon on the roughened germanium layer so as to replicate the roughness of the underlying germanium layer. Clearly, the Chu et al. reference teaches a process of forming an electrode structure with a plurality of layers, wherein a polysilicon layer overlies a roughened germanium (or metal silicide) layer. The Chu et al. reference fails to teach converting silicon in a rugged layer to a metal to thereby form a rugged metal layer as the Applicant discloses in